	Application No.	Applicant(s)
	09/766,193	KALEVO ET AL.
Notice of Allowability	Examiner	Art Unit
	ANH H DO	2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--
All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Amendment on 9/17/2004*.

2. ☒ The allowed claim(s) is/are *1-59*.

3. ☒ The drawings filed on *14 January 2001* are accepted by the Examiner.

4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☒ All   b) ☐ Some*   c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the
         International Bureau (PCT Rule 17.2(a)).
    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .
    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of
      Paper No./Mail Date _____ .
    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)
1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date *9/3/2004*
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____ .

ANH HONG DO
PRIMARY EXAMINER

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments, see Remark (page 24, first paragraph), filed 9/17/2004, with respect to claims 1-59 have been fully considered and are persuasive. The rejection of claims 1-59 has been withdrawn.

EXAMINER'S AMENDMENT

2.   An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

Please replace new claims 28-59 with:

-- 28. (New) A method according to Claim 1, comprising determining a classification for more than one neighbouring block of said block to be predicted and selecting a prediction method for said block to be predicted on the basis of the classifications for said more than one neighbouring block.

29. (New) A method according to Claim 1 wherein the selected prediction method extends image details having a certain directionality into the block to be predicted.

30. (New) A method according to Claim 1, wherein said classification is representative of the directionality of the image contents of said neighbouring block.

31. (New) A method according to Claim 30, further comprising combining classifications

representative of similar directionalities to form context classes representative of

said similar directionalities.

32. (New) A method according to Claim 1, comprising:

- determining a classification for at least two neighbouring blocks of said block to be

predicted according to the image contents of said neighbouring blocks; and

- selecting a sub-set of prediction methods from a set of available prediction methods on

the basis of the classifications of said at least two neighbouring blocks.

33. (New) A method according to Claim 32, further comprising:

- selecting a prediction method for the block to be predicted from said sub-set of

prediction methods on the basis of the classifications of said at least two neighbouring

blocks; and

- forming a spatial prediction for the block to be predicted using the selected prediction

method.

34. (New) A method according to Claim 33, further comprising providing a signal

indicative of the selected prediction method.

35. (New) A method according to Claim 33, comprising calculating a cost function

representative of an error incurred when using a particular prediction method to form a

spatial prediction for the block to be predicted and selecting the prediction method for the block to be predicted from said sub-set of prediction methods that yields the smallest value for the cost function.

36. (New) A method according to claim 35, wherein the cost function includes a measure of an error incurred when using a particular prediction method to form a spatial prediction for the block to be predicted and a measure of an amount of information required to be transmitted to a corresponding decoder when said particular prediction method is selected.

37. (New) A method for decoding a digital image in a block-based manner, in which a spatial prediction for a block is performed to reduce an amount of information to be transmitted, wherein the method comprises:

- examining pixel values of a neighbouring block of a block to be predicted to determine a classification for the neighbouring block according to the image contents of said neighbouring block;

- selecting a prediction method to be used in forming a spatial prediction for the block to be predicted on the basis of said classification; and

- forming a spatial prediction for the block to be predicted using the selected prediction method.

38. (New) A method according to Claim 37, wherein the classification for a neighbouring block is determined on the basis of directionality in the image contents of the neighbouring block.

39. (New) A method according to Claim 37, comprising determining a classification for more than one neighbouring block of said block to be predicted and selecting a prediction method for said block to be predicted on the basis of the classifications for said more than one neighbouring block.

40. (New) A method according to Claim 37, wherein the selected prediction method extends image details having a certain directionality into the block to be predicted.

41. (New) A method according to Claim 37, comprising:

- determining a classification for at least two neighbouring blocks of said block to be predicted according to the image contents of said neighbouring blocks; and

- selecting a sub-set of prediction methods from a set of available prediction methods on the basis of a combination of the classifications of said at least two neighbouring blocks.

42. (New) A method according to claim 41, further comprising:

- receiving a signal indicative of a prediction method in said sub-set of prediction methods;

- selecting a prediction method for the block to be predicted from said sub-set of

prediction methods responsive to said received signal; and

- forming a spatial prediction for the block to be predicted using the selected prediction

method.

43. (New) An encoder according to Claim 23, wherein the block classifier is arranged to

determine the classification for a neighbouring block on the basis of directionality in the

image contents of the neighbouring block.

44. (New) An encoder according to Claim 23, wherein the block classifier is arranged to

determine a classification for more than one neighbouring block of said block to be

predicted and to select a prediction method for said block to be predicted on the basis of

the classifications for said more than one neighbouring block.

45. (New) An encoder according to Claim 23, wherein the prediction estimator is

arranged to form a spatial prediction for the block to be predicted by extending image

details having a certain directionality into the block to be predicted.

46. (New) An encoder according to Claim 23, wherein said classification is

representative of the directionality of the image contents of said neighbouring block.

47. (New) An encoder according to Claim 46, wherein the block classifier is arranged to

combine classifications representative of similar directionalities to form context classes

representative of said similar directionalities.

48. (New) An encoder according to Claim 23, wherein the block classifier is arranged to

determine a classification for at least two neighbouring blocks of said block to be

predicted according to the image contents of said neighbouring blocks and the

prediction method selector is arranged to select a sub-set of prediction methods from a

set of available prediction methods on the basis of a combination of the classifications

of said at least two neighbouring blocks.

49. (New) An encoder according to Claim 48, wherein the prediction method selector is

arranged to select a prediction method for the block to be predicted from said sub-set of

prediction methods on the basis of the classifications of said at least two neighbouring

blocks and the prediction estimator is arranged to form a spatial prediction for the block

to be predicted using the selected prediction method.

50. (New) An encoder according to Claim 49, further arranged to provide a signal

indicative of the selected prediction method.

51. (New) An encoder according to Claim 49, comprising a cost function calculator for

calculating a cost function representative of an error incurred when using a particular

prediction method to form a spatial prediction for the block to be predicted and the

prediction method selector is arranged to select the prediction method for the block to

be predicted from said sub-set of prediction methods that yields the smallest value for

the cost function.

52. (New) An encoder according to claim 51, wherein the cost function includes a

measure of an error incurred when using a particular prediction method to form a spatial

prediction for the block to be predicted and a measure of an amount of information

required to be transmitted to a corresponding decoder when said particular prediction

method is selected.

53. (New) A decoder according to Claim 24, wherein the block classifier is arranged to

determine the classification for a neighbouring block on the basis of directionality in the

image contents of the neighbouring block.

54 . (New) A decoder according to Claim 24, wherein the block classifier is arranged to

determine a classification for more than one neighbouring block of said block to be

predicted and to select a prediction method for said block to be predicted on the basis of

the classifications for said more than one neighbouring block.

55. (New) A decoder according to Claim 24, wherein the prediction estimator is arranged to form a spatial prediction for the block to be predicted by extending image details having a certain directionality into the block to be predicted.

56. (New) A decoder according to Claim 24, wherein the block classifier is arranged to determine a classification for at least two neighbouring blocks according to the image contents of said neighbouring blocks of said block to be predicted according to the image contents of said neighbouring blocks and the prediction method selector is arranged to select a sub-set of prediction methods from a set of available prediction methods on the basis of a combination of the classifications of said at least two neighbouring blocks.

57. (New) A decoder according to Claim 56, further arranged to receive a signal indicative of a prediction method in said sub-set of prediction methods wherein the prediction method selector is arranged to select a prediction method for the block to be predicted from said sub-set of prediction methods responsive to said received signal.

58. (New) A mobile terminal comprising a decoder according to Claim 24.

59. (New) A storage medium for storing a software program comprising machine executable steps for performing the method according to claim28.--

3.   Claims 1-59 are allowed.

4.   The following is an examiner's statement of reasons for allowance:

* The Amendment filed 9/17/2004 includes allowable subject matters to

overcome the previous rejection;

* The invention provides a new method and device to reduce redundant

information in image data and produce more efficient coding of image data, by

introducing a spatial prediction scheme involving the prediction of pixel values,

that offers a possibility for prediction from several directions (specification, page

4, lines 23-27).

In particular, the new method and device comprises the following features, which

the prior art taken either singly or in combination does not teach:

- examining pixel values of a neighboring block of a block to be predicted to

determine a classification of the neighboring block according to the image contents of

said neighboring block (see independent claims 1, 12, 23, 24, 25, and 37).

Any comments considered necessary by applicant must be submitted no later

than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on

Statement of Reasons for Allowance."

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANH H DO whose telephone number is 703-308-6720. The examiner can normally be reached on 5/4-9.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DAVID K MOORE can be reached on 703-308-7452. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

December 13, 2004.

ANH HONG DO
PRIMARY EXAMINER